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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,707	02/27/2004	Herbert Mauerberger	10901/57	9630

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KENYON & KENYON LLP
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER	
JOHNSON, SONJI N	

ART UNIT	PAPER NUMBER
4135	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/789,707	MAUERBERGER ET AL.	
	Examiner	Art Unit	
	Sonji Johnson	4135	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27/02/2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *27/02/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Setbacken et al. 6,175,109, herein referred to as Setbacken '109, and further view of Schmitt 4,363,964, herein, referred to as Schmitt "964.

Re claim 1, Setbacken '109 discloses a scanning unit (20, Fig 1) for scanning a measuring standard including a coded track formed by a graduated scale (Abstract, Column 2 lines 1-5 and Column 3, lines 30-33, wherein the data track 11 comprises a coded track which overlies the incremental track) and a reference mark system (Abstract, Column 2 lines 1-5 and Column 3, lines 30-33, wherein the reference mark system is the incremental track of the data track 11) , comprising:
a detector system (Column 2, line 56-Column 3 line 19 and Column 4, line 32 – Column 5, line 35, wherein the detector system is the detecting unit 21, Fig 2),configured to scan the coded track (Column 5, lines 29-31); an additional detector system (Column 2, line 56-Column 3, line 19, and Column 4, line 35– Column 5, line 32, wherein the additional detector system is the detection system 22 , Fig 2) configured to scan the reference mark system (Column 4 lines 36-38, wherein the incremental track is scanned by the detection system 22), the additional detector system including a signal-sensitive surface

(Column 4, lines 43-44, wherein the detector unit has a light sensitive area) configured to receive scanning signals when scanning the reference mark system, the additional detector system including at least two sensors (Column 4, lines 32-50, wherein the two sensors are the photodetectors 22.1-22.9), but does not specifically disclose that the additional detector system can be configured to use only one of the at least two sensors to scan the reference mark system during operation of the scanning unit; or that the scanning unit comprises

a differential amplifier including two inputs, each of the sensors connected to a respective one of the two inputs; and

an arrangement configured to cover the signal-sensitive surface of a sensor not used for scanning to deactivate the sensor not used for scanning. However Schmitt "964 teaches of an encoder that provides absolute and incremental position information of an object along a certain measuring direction, having a scanning device (2, Fig 1) with a detector system configured to use only one of the at least two sensors (Column 3 lines 1-30, wherein the detector system comprises sensors 12, 13, 16, Fig 2a, 2b 3 and 4) to scan a reference mark system (Column 2, lines 56-57, wherein the reference mark system is the fixed reference mark 4, Fig 1) during operation of the scanning unit (2, Fig 1);

a differential amplifier including two inputs, each of the sensors connected to a respective one of the two inputs (Column 3, lines 15-34, wherein the sensors 12, 13, and 16 are connected to the two input terminal of amplifier 14, Fig 2a, 2b, 3, 4, 5);

and

an arrangement configured to cover the signal-sensitive surface of a sensor not used for scanning to deactivate the sensor not used for scanning (Column 4, lines 31-50, wherein the sensor 16 can be can be blocked by the occluding screen 21, Fig 2b). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the encoder of Setbacken '109 comprising a scanning unit with an additional detector system to be configured to use only one of the at least two sensors to scan the reference mark system during operation of the scanning unit; and to comprise

a differential amplifier including two inputs, each of the sensors connected to a respective one of the two inputs; and

an arrangement configured to cover the signal-sensitive surface of a sensor not used for scanning to deactivate the sensor not used for scanning since Schmitt "964 teaches an incremental measuring system with an additional detecting unit, an amplifier and an arrangement configured to cover the signal-sensitive surface of a sensor not used for scanning to deactivate the sensor not used for scanning as claimed for the purpose of providing an advantage of the invention wherein the sensors can be selectively deactivated or activated (Column 3 lines 1-30, Column 4, lines 31-50, Fig 2b).

Re claim 2, Setbacken '109 and Schmitt "964 disclose and teach the scanning unit as recited in claim 1, and Setbacken '109 further discloses that the scanning unit is configured to scan the measuring standard in accordance with a photoelectric

measuring principle (Colum 2 lines 49-51, wherein the scanning unit 20 ,photoelectrically scans the measured standard, Fig.1), and wherein the two sensors include photoelements (Column 4 lines 36-50, wherein the two detector units 22, 21 comprise photodetectors, Fig. 2).

Re claim 3 Setbacken '109 and Schmitt "964 disclose and teach the scanning unit as recited in claim 2, and Setbacken '109 further discloses that the photoelements include photodiodes (Column 4 lines 36-50, wherein the two detector units 22, 21 comprises photodetectors, Fig. 1, 2).

Re claim 4, Setbacken '109 and Schmitt "964 disclose and teach the scanning unit as recited in claim 1, and Schmitt "964 further discloses that a first input of the differential amplifier is connected to the sensor used for scanning the measuring standard and a second input of the differential amplifier is connected to the deactivated sensor (Column 3 lines15-34, wherein the sensor 12, 13 and 16 are connected to the two input terminal of amplifier 14, Fig 3, 4).

Re claim 5, Setbacken '109 and Schmitt "964 disclose and teach the scanning unit as recited in claim 1, and Schmitt "964 further discloses that each sensor (12, 13, 16) is configured to be optionally activated with the other sensor deactivated (Column 4, lines 31-50, wherein the illumination or non-illumination , i.e. the deactivation or the activation of the sensor is controlled by the occluding screen 21, Fig 2b) , each sensor configured to be optionally connected to each input of the differential amplifier (Column 3 lines 15-14 and lines 33-35 wherein the sensor 12, 13 or 12 and 16 are connected to the two input terminal of amplifier 14, Fig 3, 4).

Re claim 6, Setbacken '109 and Schmitt "964 disclose and teach the scanning unit as recited in claim 5, and Schmitt "964 further discloses that wherein the sensors (12, 13, 16) are connected to the inputs of the differential amplifier (Column 3 lines 15-14 and lines 33-35, wherein the sensor 12, 13 or 12 and 16 are connected to the two input terminals of amplifier 14, Fig 3, 4) and so that the sensor used for scanning the measuring standard is connected to a first input of the differential amplifier (Column 3 lines 15-14 and lines 33-35 wherein the activated sensor is connected to the first input) and the other, deactivated sensor (Column 4, lines 31-50, wherein the sensor 16 can be can be block by the occluding screen 21, wherein the deactivated sensor 16 can be block by the occluding screen 21, thus deactivating the sensor , Fig 2b) is connected to a second input of the differential amplifier (14, Fig 3, 4) .

Re claim 7, Setbacken '109 and Schmitt "964 disclose and teach the scanning unit as recited in claim 6, and Schmitt "964 further discloses that the sensor used for scanning the measuring standard is connected to an inverting input of the differential amplifier (Column 3, lines 15-14 and lines 33-35 wherein the sensor 12, 13 or 12 and 16 are connected to the two input terminals of amplifier 14, wherein the inverter input is shown in Fig 3, 4, 5).

Re claim 8, Setbacken '109 and Schmitt "964 disclose and teach the scanning unit as recited in claim 1, and Schmitt "964 further discloses that the sensors (12, 13, 16) are positioned directly adjacent to one another (as shown in Fig 3, 4, 5).

Re claim 9, Setbacken '109 and Schmitt "964 disclose and teach the scanning unit (2, fig 1) as recited in claim I, and Setbacken '109 further discloses that the signal.-

sensitive surfaces of the sensors are made of the same material (Column 4 lines 43-44 wherein the sensors are broken down from a rectangular light sensitive area, thus the materials are the same).

Re claim 10, Setbacken '109 and Schmitt "964 disclose and teach the scanning unit as recited in claim 1, and Setbacken '109 further discloses that wherein the signal-sensitive surfaces of the sensors are substantially the same size (Column 4, lines 46-48, wherein the photodetectors 22.1- 22.9 have a length $1I_{NC}$ and a width W_{INC}, thus the sensors are the same size)

Re claim 11, Setbacken '109 and Schmitt "964 disclose and teach the scanning unit as recited in claim I, and Schmitt "964 further discloses that the electrical connecting line, between the sensors and a corresponding input of the differential amplifier are conforming (Fig 3,4,5, wherein the electrical lines are the line that connects the sensors to the amplifier,) .

Re claim 12, Setbacken '109 and Schmitt "964 disclose and teach the scanning unit as recited in claim 1, and Schmitt "964 further discloses that the electrical connecting lines between the sensors and a corresponding input of the differential amplifier have substantially a same length (Fig 3-5, wherein the electrical lines and the inputs are approximately the same length).

Re claim 13, Setbacken '109 and Schmitt "964 disclose and teach the scanning unit as recited in claim I, and Setbacken '109 further discloses that the sensors (22.1-22.9) are configured to scan reference marks of the reference mark system having

exactly one type (Column3, lines 30-35, wherein the reference marks is the incremental track of the data track 11 with a fine graduation incremental graduation period).

Re claim 14, Setbacken '109 and Schmitt "964 disclose and teach the scanning unit as recited in claim 1, and Setbacken '109 further discloses that the sensors (22.1-22.9) are configured to scan different reference marks of the reference mark system (Abstract, Column 2 lines 1-5 and Column 3, lines 30-33, wherein the reference mark system is the incremental track of data track 11)

Re claim 15, Setbacken '109 and Schmitt "964 disclose and teach the scanning unit as recited in claim 14, and Setbacken '109 further discloses that wherein the reference mark system includes coded and uncoded reference marks (Column 2, lines 4-17 and Column 3 lines 30-55, wherein the reference mark system is the incremental track of the data track 11 comprising of a separate coarse code track).

Re claim 16, Setbacken '109 and Schmitt "964 disclose and teach the scanning unit as recited in claim 14, and Setbacken '109 further discloses that wherein the reference marks system includes distance-coded reference marks and uncoded reference marks (Column 2, lines 4-17 and Colum 3 lines 50-55, wherein the reference mark system is the incremental track of the data track 11, which also comprises a separate coarse code track, wherein the code tracks are used to generate absolute position information).

Re claim 17, Setbacken '109 and Schmitt "964 discloses and teach the scanning unit as recited in claim 1, and Setbacken '109 further discloses that wherein the coded track is arranged as an incremental track (Column, 4, lines 20-24, wherein

the encoder has an incremental track and separate code track within one data track 11).

Re claim 18, Setbacken '109 discloses a measuring device for taking positional measurements of two assemblies which are movable in relation to one another (Column 1 lines 66- Column 2, line 2, wherein the encoder provides absolute and incremental position information of an object which moves along a certain path), comprising:
a measuring standard including a coded track formed by a graduated scale and a reference mark system (Column 2 lines 1-6, wherein the data track 11, has an fine increment track, wherein the fine increment track of data track 11 is the reference mark system with separate course code tracks) and
a scanning unit (20) , including:
a detector system configured to scan the coded track (Column 5, lines 29-31, wherein the detector system is the detecting unit 21 that scans the code tracks);
an additional detector system (Column 2, line 56,-Column 3, line 19, and Column 4 line 32 – Column 5, line 35, wherein the additional detector system is the detection system 22) configured to scan the reference mark system (Column 4 lines 36-38, wherein the reference mark system, specifically the incremental track, is scanned by detector 22), the additional detector system 22 including a signal-sensitive surface (Column 4, lines 43-44, wherein the detector unit has a light sensitive area) configured to receive scanning signals when scanning the reference mark system (Abstract, Column 2 lines 1-5 and Column 3, lines 30-33,wherein the reference mark system is the incremental track of data track 11), the additional detector system including at least two sensors (Column 4, lines 32-50 wherein the two sensors are the photodetectors 22.1-

22.9), but does not specifically disclose that the additional detector system can be configured to use only one of the at least two sensors to scan the reference mark system during operation of the scanning unit; or that the scanning unit comprises

a differential amplifier including two inputs, each of the sensors connected to a respective one of the two inputs; and

an arrangement configured to cover the signal-sensitive surface of a sensor not used for scanning to deactivate the sensor not used for scanning. However, Schmitt "964 teaches of an encoder that provides absolute and incremental position information of an object along a certain measuring direction, having a scanning device (2, Fig 1) with a detector system configured to use only one of the at least two sensors (Column 3 lines 1-30, wherein the detector system comprises sensors 12, 13, 16, Fig 2a, 2b, 3 and Fig 4) to scan a reference mark system (Column 2, lines 56-57, wherein the reference mark system is the fixed reference mark 4, Fig 1) during operation of the scanning unit (2, Fig 1)

a differential amplifier including two inputs, each of the sensors connected to a respective one of the two inputs (Column 3, lines 15-34, wherein the sensors 12, 13 and 16 are connected to the two input terminals of amplifier 14, Fig 2a, 2b, 3, 4, 5); and

an arrangement configured to cover the signal-sensitive surface of a sensor not used for scanning to deactivate the sensor not used for scanning (Column 4, lines 31-50, wherein the sensor 16 can be can be blocked by the occluding screen 21, thus deactivating the sensor, Fig 2b). Therefore it would have been obvious to one having

ordinary skill in the art at the time the invention was made for the encoder of Setbacken '109 comprising of a scanning unit with an additional detector system to be configured to use only one of the at least two sensors to scan the reference mark system during operation of the scanning unit; and to comprise

a differential amplifier including two inputs, each of the sensors connected to a respective one of the two inputs; and

an arrangement configured to cover the signal-sensitive surface of a sensor not used for scanning to deactivate the sensor not used for scanning since Schmitt "964 teaches an incremental measuring system with an additional detecting unit, an amplifier and an arrangement configured to cover the signal-sensitive surface of a sensor not used for scanning to deactivate the sensor not used for scanning as claimed for the purpose of providing an advantage of the invention wherein the sensors can be selectively deactivated or activated (Column 3 lines 1-30, Column 4, lines 31-50, Fig 2b).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sonji Johnson whose telephone number is 571-270-5266. The examiner can normally be reached on Monday to Friday 7:30-5:00, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Brewster can be reached on 571-272-1854. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sonji Johnson/
Examiner, Art Unit 4135

/S. J./
Examiner, Art Unit 4135

/Jessica T Stultz/
Primary Examiner, Art Unit 4135